SEQUENCE LISTING

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<110> Zhou, Ming-Ming
      Goldfarb, Mitchell
<120> Methods of Identifying Modulators of the
  FGF Receptor
<130> 2459-1-002N
<140> 09/757,415
<141> 2001-01-09
<150> 60/175,867
<151> 2000-01-12
<160> 33
<170> FastSEQ for Windows Version 4.0
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<212> PRT
<213> Homo sapiens
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Met Gly Ser Cys Cys Ser Cys Pro Asp Lys Asp Thr Val Pro Asp Asn
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His Arg Asn Lys Phe Lys Val Ile Asn Val Asp Asp Asp Gly Asn Glu
                                25
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Leu Gly Ser Gly Ile Met Glu Leu Thr Asp Thr Glu Leu Ile Leu Tyr
                            40
Thr Arg Lys Arg Asp Ser Val Lys Trp His Tyr Leu Cys Leu Arg Arg
                        55
Tyr Gly Tyr Asp Ser Asn Leu Phe Ser Phe Glu Ser Gly Arg Arg Cys
                    70
Gln Thr Gly Gln Gly Ile Phe Ala Phe Lys Cys Ala Arg Ala Glu Glu
                                    90
Leu Phe Asn Met Leu Gln Glu Ile Met Gln Asn Asn Ser Ile Asn Val
                                105
           100
Val Glu Glu Pro Val Val Glu Arg Asn Asn His Gln Thr Glu Leu Glu
                            120
Val Pro Arg Thr Pro Arg Thr Pro Thr Thr Pro Gly Phe Ala Ala Gln
                        135
                                             140
Asn Leu Pro Asn Gly Tyr Pro Arg Tyr Pro Ser Phe Gly Asp Ala Ser
                    150
                                        155
Ser His Pro Ser Ser Arg His Pro Ser Val Gly Ser Ala Arg Leu Pro
                                    170
Ser Val Gly Glu Glu Ser Thr His Pro Leu Leu Val Ala Glu Glu Gln
                                185
            180
Val His Thr Tyr Val Asn Thr Thr Gly Val Gln Glu Glu Arg Lys Asn
                            200
Arg Thr Ser Val His Val Pro Leu Glu Ala Arg Val Ser Asn Ala Glu
                                             220
                        215
Ser Ser Thr Pro Lys Glu Glu Pro Ser Ser Ile Glu Asp Arg Asp Pro
```

230

235

```
Gln Ile Leu Leu Glu Pro Glu Gly Val Lys Phe Val Leu Gly Pro Thr
                                   250
               245
Pro Val Gln Lys Gln Leu Met Glu Lys Glu Lys Leu Glu Gln Leu Gly
                               265
Arg Asp Gln Val Ser Gly Ser Gly Ala Asn Asn Thr Glu Trp Asp Thr
                           280
Gly Tyr Asp Ser Asp Glu Arg Arg Asp Ala Pro Ser Val Asn Lys Leu
                                           300
                      295
Val Tyr Glu Asn Ile Asn Gly Leu Ser Ile Pro Ser Ala Ser Gly Val
                                      315
                   310
Arg Arg Gly Arg Leu Thr Ser Thr Ser Thr Ser Asp Thr Gln Asn Ile
                                   330
               325
Asn Asn Ser Ala Gln Arg Arg Thr Ala Leu Leu Asn Tyr Glu Asn Leu
                               345
Pro Ser Leu Pro Pro Val Trp Glu Ala Arg Lys Leu Ser Arg Asp Glu
                           360
Asp Asp Asn Leu Gly Pro Lys Thr Pro Ser Leu Asn Gly Tyr His Asn
                       375
Asn Leu Asp Pro Met His Asn Tyr Val Asn Thr Glu Asn Val Thr Val
                   390
                                      395
Pro Ala Ser Ala His Lys Ile Glu Tyr Ser Arg Arg Asp Cys Thr
               405
                                   410
Pro Thr Val Phe Asn Phe Asp Ile Arg Pro Ser Leu Glu His Arg
                               425
Gln Leu Asn Tyr Ile Gln Val Asp Leu Glu Gly Gly Ser Asp Ser Asp
                           440
                                               445
Asn Pro Gln Thr Pro Lys Thr Pro Thr Thr Pro Leu Pro Gln Thr Pro
                       455
Thr Arg Arg Thr Glu Leu Tyr Ala Val Ile Asp Ile Glu Arg Thr Ala
                   470
                                       475
Ala Met Ser Asn Leu Gln Lys Ala Leu Pro Arg Asp Asp Gly Thr Ser
                                   490
               485
Arg Lys Thr Arg His Asn Ser Thr Asp Leu Pro Met
                               505
```

```
<210> 2
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<400> 2

| Met | Trp | Gly | Trp | Lys | Cys | Leu | Leu | Phe | Trp | Ala | Val | Leu | Val | Thr 15 | Ala |
|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|
| Thr | Leu | Cys | Thr 20 | Ala | Arg | Pro | Ala | Pro 25 | | Leu | Pro | Glu | Gln 30 | | Gln |
| Pro | Trp | Gly 35 | Val | Pro | Val | Glu | Val 40 | Glu | Ser | Leu | Leu | Val 45 | His | Pro | Gly |
| Asp | Leu 50 | Leu | Gln | Leu | Arg | Cys 55 | Arg | Leu | Arg | Asp | Asp 60 | Val | Gln | Ser | Ile |
| Asn 65 | Trp | Leu | Arg | Asp | Gly 70 | Val | Gln | Leu | Val | Glu 75 | Ser | Asn | Arg | Thr | Arg 80 |
| Ile | Thr | Gly | Glu | Glu 85 | Val | Glu | Val | Arg | Asp 90 | Ser | Ile | Pro | Ala | Asp 95 | Ser |
| Gly | Leu | Tyr | Ala 100 | Cys | Val | Thr | Ser | Ser 105 | Pro | Ser | Gly | Ser | Asp 110 | Thr | Thr |
| Tyr | Phe | Ser | Val | Asn | Val | Ser | Asp | Ala | Leu | Pro | Ser | Ser | Glu | Asp | Asp |

<211> 822

<212> PRT

<213> Mus musculus

| | | 115 | | | | | 120 | | | | | 125 | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asp | Asp 130 | | Asp | Asp | Ser | Ser 135 | | Glu | Glu | Lys | Glu 140 | Thr | Asp | Asn | Thr |
| Lys 145 | Pro | Asn | Arg | Arg | Pro 150 | Val | Ala | Pro | Tyr | Trp 155 | Thr | Ser | Pro | Glu | Lys 160 |
| | Glu | Lys | Lys | Leu 165 | His | Ala | Val | Pro | Ala 170 | Ala | Lys | Thr | Val | Lys 175 | Phe |
| Lys | Cys | Pro | Ser 180 | Ser | Gly | Thr | Pro | Asn 185 | Pro | Thr | Leu | Arg | Trp 190 | Leu | Lys |
| Asn | Gly | Lys 195 | Glu | Phe | Lys | Pro | Asp 200 | His | Arg | Ile | Gly | Gly 205 | Tyr | Lys | Val |
| _ | 210 | | | | | 215 | | | | | 220 | | Pro | | |
| 225 | | | | | 230 | | | | | 235 | | | Ser | | 240 |
| | | | | 245 | | | | | 250 | | | | Arg | 255 | |
| | | | 260 | | | | | 265 | | | | | Gly 270 | | |
| | | 275 | | | | | 280 | | | | | 285 | His | | |
| | 290 | | | | | 295 | | | | | 300 | | Pro | | |
| 305 | | | | | 310 | | | | | 315 | | | Thr | | 320 |
| | | | | 325 | | | | | 330 | | | | Glu | 335 | |
| | | | 340 | | | | | 345 | | | | | Ser 350 | | |
| | | 355 | | | | | 360 | | | | | 365 | Pro | | |
| | 370 | | | | | 375 | | | | | 380 | | Thr | | |
| 385 | | | | | 390 | | | | | 395 | | | Lys | | 400 |
| | | | | 405 | | | | | 410 | | | | Val | 415 | |
| | | _ | 420 | | | | | 425 | | | | | Ser 430 | | |
| | | 435 | | | - | | 440 | | | | | 445 | Pro Glu | | |
| | 450 | | | | | 455 | | | | | 460 | | Leu | | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| _ | | | | 485 | | | | | 490 | | | | Leu - | 495 | |
| | | | 500 | | | | | 505 | | | | | Lys 510 | | |
| | _ | 515 | | | | | 520 | | | | | 525 | Ser | | |
| | 530 | | | | | 535 | | | | | 540 | | Lys | | |
| 545 | | | | | 550 | | | | | 555 | | | Tyr | | 560 |
| Val | Glu | Tyr | Ala | Ser 565 | Lys | Gly | Asn | Leu | Arg 570 | Glu | Tyr | Leu | Gln | Ala 575 | Arg |

```
Arg Pro Pro Gly Leu Glu Tyr Cys Tyr Asn Pro Ser His Asn Pro Glu
                                585
           580
Glu Gln Leu Ser Ser Lys Asp Leu Val Ser Cys Ala Tyr Gln Val Ala
                                                605
                           600
Arg Gly Met Glu Tyr Leu Ala Ser Lys Lys Cys Ile His Arg Asp Leu
                       615
                                           620
Ala Ala Arg Asn Val Leu Val Thr Glu Asp Asn Val Met Lys Ile Ala
                                        635
                   630
Asp Phe Gly Leu Ala Arg Asp Ile His His Ile Asp Tyr Tyr Lys Lys
               645
                                    650
Thr Thr Asn Gly Arg Leu Pro Val Lys Trp Met Ala Pro Glu Ala Leu
                                665
           660
Phe Asp Arg Ile Tyr Thr His Gln Ser Asp Val Trp Ser Phe Gly Val
                            680
Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly Ser Pro Tyr Pro Gly Val
                       695
                                            700
Pro Val Glu Glu Leu Phe Lys Leu Lys Glu Gly His Arg Met Asp
                   710
                                       715
Lys Pro Ser Asn Cys Thr Asn Glu Leu Tyr Met Met Arg Asp Cys
               725
                                    730
Trp His Ala Val Pro Ser Gln Arg Pro Thr Phe Lys Gln Leu Val Glu
           740
                                745
                                                    750
Asp Leu Asp Arg Ile Val Ala Leu Thr Ser Ser Gln Glu Tyr Leu Asp
                            760
                                                765
Leu Ser Ile Pro Leu Asp Gln Tyr Ser Pro Ser Phe Pro Asp Thr Arg
                                            780
                        775
Ser Ser Thr Cys Ser Ser Gly Glu Asp Ser Val Phe Ser His Glu Pro
                                        795
                   790
Leu Pro Glu Glu Pro Cys Leu Pro Arg His Pro Thr Gln Leu Ala Asn
                                    810
Ser Gly Leu Lys Arg Arg
            820
<210> 3
<211> 22
<212> PRT
<213> Mus musculus
<400> 3
His Ser Gln Met Ala Val His Lys Leu Ala Lys Ser Ile Pro Leu Arg
                5
Arg Gln Val Thr Val Ser
            20
<210> 4
<211> 11
<212> PRT
<213> Artificial Sequence
<220>
<223> Tyrosine phosphorylation peptide
<221> VARIANT
<222> (9)...(9)
<223> Xaa is a phosphotyrosine
```

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<400> 4
Leu Val Ile Ala Gly Asn Pro Ala Xaa Arg Ser
     5
<210> 5
<211> 16
<212> PRT
<213> Artificial Sequence
<220>
<223> Consensus sequence
<221> VARIANT
<222> (2)...(3)
<223> Xaa = Any Amino Acid
<221> VARIANT
<222> (5)...(7)
<223> Xaa = Any Amino Acid
<221> VARIANT
<222> (9)...(9)
<223> Xaa = Any Amino Acid
<221> VARIANT
<222> (11)...(11)
<223> Xaa = Any Amino Acid
<221> VARIANT
<222> (13)...(13)
<223> Xaa = Any Amino Acid
<221> VARIANT
<222> (15)...(15)
<223> Xaa = Any Amino Acid
<400> 5
Val Xaa Xaa Leu Xaa Xaa Ile Xaa Leu Xaa Arg Xaa Val Xaa Val
                 5
<210> 6
<211> 4
<212> PRT
<213> Artificial Sequence
<220>
<223> Motif
<221> VARIANT
<222> (3)...(3)
<223> Xaa = Any Amino Acid
<221> VARIANT
<222> (4)...(4)
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<223> Xaa is a phosphotyrosine
<400> 6
Asn Pro Xaa Xaa
1
<210> 7
<211> 12
<212> PRT
<213> Artificial Sequence
<220>
<223> Synthetic peptide derived from the TrKA receptor
<221> VARIANT
<222> (8)...(8)
<223> Xaa is a phosphotyrosine
<400> 7
His Ile Ile Glu Asn Pro Gln Xaa Phe Ser Asp Ala
                 5
                                    10
<210> 8
<211> 55
<212> PRT
<213> Homo sapiens
<400> 8
Asp Asn His Arg Asn Lys Phe Lys Val Ile Asn Val Asp Asp Asp Gly
                                    10
Asn Glu Leu Gly Ser Gly Ile Met Glu Leu Thr Asp Thr Glu Leu Ile
            20
                                 25
Leu Tyr Thr Arg Lys Arg Asp Ser Val Lys Trp His Tyr Leu Cys Leu
                            40
Arg Arg Tyr Gly Tyr Asp Ser
    50
<210> 9
<211> 55
<212> PRT
<213> Homo sapiens
<400> 9
Asp Asn His Pro Thr Lys Phe Lys Val Thr Asn Val Asp Asp Glu Gly
                                     10
Val Glu Leu Gly Ser Gly Val Met Glu Leu Thr Gln Ser Glu Leu Val
                                 25
Leu His Leu His Arg Arg Glu Ala Val Arg Trp Pro Tyr Leu Cys Leu
                             40
                                                 45
Arg Arg Tyr Gly Tyr Asp Ser
    50
```

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<211> 61
<212> PRT
<213> Homo sapiens
<400> 10
Pro Ala Phe Lys Glu Val Trp Gln Val Ile Leu Lys Pro Lys Gly Leu
                                    10
Gly Gln Thr Lys Asn Leu Ile Gly Ile Tyr Arg Leu Cys Leu Thr Ser
                                25
           20
Lys Thr Ile Ser Phe Val Lys Leu Asn Ser Glu Ala Ala Val Val
                            40
Leu Gln Leu Met Asn Ile Arg Arg Cys Gly His Ser Glu
<210> 11
<211> 61
<212> PRT
<213> Homo sapiens
<400> 11
Ala Ala Tyr Arg Glu Val Trp Gln Val Asn Leu Lys Pro Lys Gly Leu
                                    10
Gly Gln Ser Lys Asn Leu Thr Gly Val Tyr Arg Leu Cys Leu Ser Ala
                                25
Arg Thr Ile Gly Phe Val Lys Leu Asn Cys Glu Gln Pro Ser Val Thr
Leu Gln Leu Met Asn Ile Arg Arg Cys Gly His Ser Asp
                        55
<210> 12
<211> 61
<212> PRT
<213> Mus musculus
<400> 12
Ala Val Tyr Arg Glu Val Trp Gln Val Asn Leu Lys Pro Lys Gly Leu
Gly Gln Ser Lys Asn Leu Thr Gly Val Tyr Arg Leu Cys Leu Ser Ala
Arg Thr Ile Gly Phe Val Lys Leu Asn Cys Glu Gly Pro Ser Val Thr
                            40
Leu Gln Leu Asn Asn Ile Arg Arg Cys Gly His Ser Asp
<210> 13
<211> 61
<212> PRT
<213> Homo sapiens
<400> 13
Pro Phe Tyr Lys Asp Val Trp Gln Val Ile Val Lys Pro Arg Gly Leu
                                    10
Gly His Arg Lys Glu Leu Ser Gly Val Phe Arg Leu Cys Leu Thr Asp
            20
                                25
```

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Glu Glu Val Val Phe Val Arg Leu Asn Thr Glu Val Ala Ser Val Val
Val Gln Leu Leu Ser Ile Arg Arg Cys Gly His Ser Glu
                        55
<210> 14
<211> 61
<212> PRT
<213> Mus musculus
<400> 14
Pro Phe Tyr Lys Asp Val Trp Gln Val Val Lys Pro Arg Gly Leu
Gly His Arg Lys Glu Leu Ser Gly Val Phe Arg Leu Cys Leu Thr Asp
                                25
Glu Glu Val Val Phe Val Arg Leu Asn Thr Glu Val Ala Ser Val Val
                           40
Val Gln Leu Leu Ser Ile Arg Arg Cys Gly His Ser Glu
<210> 15
<211> 72
<212> PRT
<213> Mus musculus
<400> 15
Ala Pro Phe Gln Asp Val Trp Pro Val Thr Leu Arg Ser Lys Gly Leu
                                   10
Gly Arg Ala Gln Gly Leu Ser Ser Gly Ser Tyr Arg Leu Cys Leu Gly
                                25
Ser Gly Ala Leu Ser Leu Leu Arg Lys Pro Gly Ser Lys Gly Ser Arg
                           40
Asp Ser Arg Ala Thr Pro Pro Pro Val Leu Arg Leu Ser Leu Leu Ser
                        55
Val Arg Arg Cys Gly His Ala Asp
                    70
<210> 16
<211> 71
<212> PRT
<213> Homo sapiens
<400> 16
Asn Leu Phe Ser Phe Glu Ser Gly Arg Arg Cys Gln Thr Gly Gln Gly
                                    10
Ile Phe Ala Phe Lys Cys Ala Arg Ala Glu Glu Leu Phe Asn Met Leu
                                25
Gln Glu Ile Met Gln Asn Asn Ser Ile Asn Val Val Glu Glu Pro Val
                            40
                                                45
Val Glu Arg Asn Asn His Gln Thr Glu Leu Glu Val Pro Arg Thr Pro
Arg Thr Pro Thr Thr Pro Gly
```

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<210> 17
<211> 72
<212> PRT
<213> Homo sapiens
<400> 17
Asn Leu Phe Ser Phe Glu Ser Gly Arg Arg Cys Gln Thr Gly Gln Gly
                                    10
Ile Phe Ala Phe Lys Cys Ser Arg Ala Glu Glu Ile Phe Asn Leu Leu
Gln Asp Leu Met Gln Cys Asn Ser Ile Asn Val Met Glu Glu Pro Val
Ile Ile Thr Arg Asn Ser His Pro Ala Glu Leu Asp Leu Pro Arg Ala
Pro Gln Pro Pro Asn Ala Leu Gly
<210> 18
<211> 49
<212> PRT
<213> Homo sapiens
<400> 18
Asn Phe Phe Phe Ile Glu Val Gly Arg Ser Ala Val Thr Gly Pro Gly
Glu Phe Trp Met Gln Val Asp Asp Ser Val Val Ala Gln Asn Met His
                                25
Glu Thr Ile Leu Glu Ala Met Arg Ala Met Ser Asp Glu Phe Arg Pro
                            40
Arg
<210> 19
<211> 49
<212> PRT
<213> Homo sapiens
<400> 19
Ser Phe Phe Phe Ile Glu Val Gly Arg Ser Ala Val Thr Gly Pro Gly
                                    10
Glu Leu Trp Met Gln Ala Asp Asp Ser Val Val Ala Gln Asn Ile His
                                25
Glu Thr Ile Leu Glu Ala Met Lys Ala Leu Lys Glu Leu Phe Glu Phe
Arg
<210> 20
<211> 49
<212> PRT
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<213> Mus musculus

<400> 20

 Ser Phe Phe Phe Phe Ile Glu Val Gly Arg Ser Ala Val Thr Gly Pro Gly 1
 5
 10
 15

 Glu Leu Trp Met Gln Val Asp Asp Ser Val Val Ala Gln Asn Ile His 20
 25
 30

 Glu Thr Ile Leu Glu Ala Met Lys Ala Leu Lys Glu Leu Phe Glu Phe 35
 40
 45

<210> 21 <211> 49

<212> PRT

<213> Homo sapiens

<400> 21

Gln Tyr Phe Phe Leu Glu Val Gly Arg Ser Thr Val Ile Gly Pro Gly

1 5 10 15

Glu Leu Trp Met Gln Val Asp Asp Cys Val Val Ala Gln Asn Met His
20 25 30

Glu Leu Phe Leu Glu Lys Met Arg Ala Leu Cys Ala Asp Glu Tyr Arg
35 40 45

Ala

<210> 22 <211> 49

<212> PRT <213> Mus musculus

<400> 22

Ala

<210> 23

<211> 49

<212> PRT

<213> Mus musculus

<400> 23

 Ser Phe Phe Phe Leu Glu Leu Gly Arg Ser Ala Pro Ile Gly Pro Gly

 1
 5
 10
 15

 Glu Leu Trp Leu Gln Ala Pro Asp Ala Val Val Ala Gln Ser Ile His
 20
 25
 30

 Glu Thr Val Leu Ala Ala Met Lys Arg Leu Gly Ser Asn Ala Ala Gly
 35
 40
 45

Lys

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<210> 24
<211> 22
<212> PRT
<213> Homo sapiens
<400> 24
His Ser Gln Met Ala Val His Lys Leu Ala Lys Ser Ile Pro Leu Arg
                5
                                    10
Arg Gln Val Thr Val Ser
            20
<210> 25
<211> 22
<212> PRT
<213> Xenopus laevis
<400> 25
Asn Ser Gln Leu Ala Val His Lys Leu Ala Lys Ser Ile Pro Val Arg
            5
                                   10
Arg Gln Val Thr Val Ser
            20
<210> 26
<211> 22
<212> PRT
<213> Homo sapiens
<400> 26
Ser Ser Gln Pro Ala Val His Lys Leu Thr Lys Arg Ile Pro Leu Arg
                                    10
                5
Arg Gln Val Thr Val Ser
            20
<210> 27
<211> 22
<212> PRT
<213> Xenopus laevis
<400> 27
Phe Thr Gly Pro Pro Val His Lys Leu Thr Lys Arg Ile Pro Leu His
                                    10
Arg Gln Val Thr Val Ser
            20
<210> 28
<211> 20
<212> PRT
<213> Homo sapiens
Gly Ser Pro Thr Val His Lys Ile Ser Arg Phe Pro Leu Lys Arg Gln
                                    10
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Val Ser Leu Glu
            20
<210> 29
<211> 20
<212> PRT
<213> Mus musculus
<400> 29
Gly Ser Pro Thr Val His Lys Val Ser Arg Phe Pro Leu Lys Arg Gln
                                    10
1
Val Ser Leu Glu
            20
<210> 30
<211> 21
<212> PRT
<213> Xenopus laevis
<400> 30
Thr Ala Pro Pro Val His Lys Val Ser Arg Phe Pro Leu Lys Arg Gln
                                    10
1
Gln Val Ser Leu Glu
            20
<210> 31
<211> 21
<212> PRT
<213> Homo sapiens
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Arg Pro Pro Ala Thr Val Gln Lys Leu Ser Arg Phe Pro Leu Ala Arg
                                   10
1
Gln Phe Ser Leu Glu
            20
<210> 32
<211> 21
<212> PRT
<213> Mus musculus
<400> 32
Arg Gln Pro Val Thr Ile Gln Lys Leu Ser Arg Phe Pro Leu Ala Arg
                                                         15
                                    10
Gln Phe Ser Leu Glu
            20
<210> 33
<211> 21
<212> PRT
<213> Xenopus laevis
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